

THE FERNS OF LORD HOWE ISLAND.

By the Rev. W. WALTER WATTS.

(Communicated by J. H. Maiden.)

During a stay of nearly two months on Lord Howe Island—July to August, 1911—I endeavoured to collect specimens of all the ferns growing in so rich a botanical field. A few of the species I found to be plentiful in the more accessible parts of the Island, while others, such as those on Mount Gower, could only be secured after some stiff climbing.

Among the ferns that are fairly common near the residential parts of the Island, are *Asplenium lucidum* Forst., *Polypodium pustulatum* Forst., *Pteris comans* Forst., and *Hypolepis tenuifolia* Bernh.

On the northern hills, growing in fair profusion, I found *Asplenium nidus* L. In general appearance, it seemed to me to differ from the Australian form. Growing mostly on the ground, or in soil among rocks (never on trees), it looked, at a distance, like a large lily. On the eastern slope, below the "Look-out," the fronds tended towards a crinkled form that it was impossible to press evenly. But the variations can probably be nearly all matched in New South Wales. I looked carefully for anything approaching *Asplenium Robinsonii* (of Norfolk Island), which Mr. E. King claims to have found (and unfortunately lost), on the eastern slopes of Mt. Gower, but without success.

The northern hills provided also *Pellaea falcata* Fée, *Cyclophorus confluens* (R.Br.) Chr., *Asplenium adiantoides* (L.) Chr., (*A. falcatum* Lam.), *Adiantum hispidulum* Sw., *Polypodium tenellum* Forst., *Platycterium alpicorne* Desv., *Notholaena distans* R.Br. One specimen of *Asplenium adiantoides*, collected near the "Look-out," varied from the type in the pinnae being divided almost to the rachis.

On the North Head I collected *Adiantum athiopicum* L., the only place on the Island where it is said to grow. Here also, I found my only specimens of *Pteridium aquilinum* (L.) Kuhn.

The south end of the Island, where Mounts Lidgbird and Gower lift their heads to a height of nearly 3,000 feet, yields by far the richest flora, and several of the ferns growing here are quite unique.

On the way south, in Robins' swamp, I collected *Dryopteris parasitica* (L.) O. Ktze., (*Aspidium molle* Sw.), here only in the whole of my rambles. But the real fern-wealth of the Island begins after one reaches the residences of the Johnsons and the Kings.

On the track through Johnson's garden, I found *Ophioglossum vulgatum* L., not previously recorded for the Island. Farther on, growing in profusion, were, besides some of the species already mentioned, *Pteris tremula* R.Br., and *Hypolepis tenuifolia* Forst.

Some distance up a creek ("run" is the local word), to the left, after emerging from the garden, in the company of two lads—Harold Nichol and Charlie Retmock—I found magnificent specimens of *Marattia fraxinea* Sm., var. *salicina* (Sm.). This fine fern is known to the Islanders as the Horse-Shoe Fern, on account of the striking likeness of the base of the fronds, when broken off, to the frog of a horse's foot. This fern, it is difficult to separate from *M. fraxinea*, but the fact that the sori are much larger and fewer than in typical specimens, and stand further back from the margin of the pinnules, must surely justify its position as a variety. This variety is found elsewhere in the Pacific, and was set up by Smith as *M. salicina*. Under the guidance of Mr. Fenton, I found this fern also in a "run" on the north-eastern side of Mt. Lidgbird.

On the volcanic slopes of the ridge between Intermediate Hill and Mt. Lidgbird, and at other places subsequently, I collected the beautiful *Asplenium melanochlamys* Hook., a

fern that, at a little distance, may be mistaken for a young tree-fern; also *Cyathea Macarthurii* F.v.M.

In the "runs," small specimens of *Trichomanes Bauerianum* Endl., (*T. apiifolium* Presl.) were found. These specimens were afterwards destined to be dwarfed into insignificance. The local name is "Feather-fern," not "Parsley-fern," as stated by Mr. Maiden, in 1898.

Up the slopes of Mt. Lidgbird, and close under the stupendous cliffs of its north-eastern and eastern faces, I collected small specimens of *Polypodium australe* Mitt., and *Polypodium Hookeri* Brack. These specimens were similar in size to those found in Australia, but were quite outclassed by the very fine plants afterwards collected on Mt. Gower. Here, also, I found good specimens, as afterwards in similar situations round Mt. Gower, of the unique *Polystichum Moorei* Chr., which is locally known as "the heavy fern," on account of the weightiness of a good-sized fruiting frond. *Nephrolepis cordifolia* (Sw.) also grows about the base of the cliffs, and elsewhere in the mountains.

The climax of the fern-riches of Lord Howe Island is reached on the higher slopes and the summit of Mt. Gower. Here are to be found, in utmost profusion, *Hymenophyllum pumilum* C. Moore, *H. multifidum* Swartz, *Trichomanes Bauerianum* Endl., (magnificent specimens), *Asplenium pteridioides* Baker, *Blechnum capense* (L.) Schlecht (*Lomaria* Willd.), *B. attenuatum* (Sw.) Mett., *B. Fullagari* (F.v.M.) Chr., *Dryopteris decomposita* (R.Br.) O. Ktze., var. *nephrodioides* (*Dicksonia nephrodioides*) (F.v.M.), *Alsophila robusta* C. Moore (*A. australis*, var. *nigrescens* Benth.); also, though less plentifully, *Hemitelia Moorei* Baker, *Cyathea brevipiuna* Baker, *Leptopteris Moorei* Chr., *Hymenophyllum minimum* Sw. The last two I did not find, and my specimens of *Hemitelia* were poor: but Mr. King and his son very kindly made a special trip to the top of Mt. Gower, and brought me down specimens of *Hemitelia* and *Leptopteris*. *Hymenophyllum minimum* I did not secure. Regarding

Alsophila robusta, I entirely concur in the notes made by Mr. Maiden (*loc. cit. infra*). No one who sees it actually growing, can doubt that it is a true species.

In what is known as "The Dinner Run," on the eastern side of Mt. Lidgbird, I found a fern which has been, up to now, identified with *Asplenium pteridioides*. The only point of likeness—and, of course, it is a striking one—was, that the sori were very long and quite marginal, giving it a pteroid appearance. I found, however, that the Islanders distinguish the two, calling *A. pteridioides* the "Crown fern," and the other the "Parsley," or "Celery" fern (I forget which). Even on the Island, I was quite convinced that the two ferns were distinct, after observing their habitat and general characteristics. On my return to Sydney, I commenced a careful examination of details, and found, among other things, that the spore-cases were much larger in the one than in the other, and that, while the spores of *A. pteridioides* were kidney-shaped, those of the other were uniformly oval in form. Miss Flockton, the Herbarium artist, kindly made drawings of the spores, and these, together with my notes, were sent by Mr. E. Betche to Dr. Christ, of Basle. One point had struck me as of great importance: the Dinner Run fern was, to a slight extent, proliferous, after the manner of *A. bulbiferum*; *A. pteridioides*, never. Dr. Christ's reply was as follows:—"One would say it was an intermediate form between *A. bulbiferum* Forst., of which it has the habit, and *A. pteridioides*, of which it has the marginal sori. The proliferous apex of the frond also links it with *A. bulbiferum*. Might it be a hybrid between the two? The difference, also, of the spores is striking. You would do well to examine the spores of *A. bulbiferum* to see if these resemble those of the form 'A' (the fern in question). But I believe that, for the present, 'A' must be admitted to be a different species, and new, while granting its affinity with *A. bulbiferum*."

An examination of the spores of *A. bulbiferum* proved them to be practically identical with those of the form "A."

The idea of a hybrid seems out of the question. The typical *A. bulbiferum* does not grow on the Island, and the form "A" is to be found at different points, propagating itself with definite characters. I have, therefore, decided to present it as a variety of *A. bulbiferum*, as follows:—

ASPLENIUM BULBIFERUM Forst., var. HOWEANUM Watts,
var. nov.

Growing in crevices of water-washed rocks in creeks: very flaccid: stem very short. Differs from the type in its softer and more herbaceous texture, its dark-green colour, its shorter and wider scales, its smaller and more obtuse fronds, its shorter pinnæ (seldom more than 3 inches long), its obtuse and scarcely divided pinnules, only the lower ones cut down to the winged rhachis, but especially in its elongated, narrow, marginal sori, giving it a pteroid appearance, and suggesting affinity to *A. pteridioides* Baker, from which, however, it differs in its habitat, habit, and structure, in the shape of its spores, and in other characters.

Dinner Run, eastern slope of Mt. Lidgbird: Run on top of Mt. Gower, etc.: leg. W. W. Watts, July-Aug., 1911. There are also specimens in the Sydney Herbarium, collected by Mr. J. H. Maiden, in 1898, and labelled *A. pteridioides* Baker.

An especially beautiful fern was collected by Mr. J. H. Maiden, Director of the Botanical Gardens, Sydney, in 1898, among the rocks on the western side of the Island, at the mouth of Soldier's Creek: and some notes concerning it were afterwards published by him in these Proceedings (1898, Pt. ii, p.146).

According to Mr. Maiden's notes, the fern had been collected by Mr. E. King, on the eastern side of Mt. Lidgbird, and sent by Mr. Chas. Moore, Director of the Sydney Gardens, to Dr. H. Christ, who, in a letter received in 1896, named it *Aspidium aculeatum* var. *Moorei* Chr., and described it briefly in Latin. Mr. Maiden printed the description (*loc. cit.*), and added that, when King saw the fern,



“he professed” to know it, and called it the “Crimp fern.” That King knew it is clear, and he very kindly collected some good specimens for me in a cave on, I believe the south-western side of Mt. Lidgbird. No one else on the Island seemed to know it, and King was probably the only man who had collected it prior to Mr. Maiden’s visit.

Mr. Maiden’s note having been overlooked, the fern was again sent to Dr. Christ; and this time—he himself having apparently forgotten his previous determination—the following notes were received from him:—

“I take it to be an elongated form of *Moorei*” (i.e., *Polystichum Moorei*), “characterised by its obtuse pinnules, joined together towards the base, its coriaceous tissue, its dimensions, its sori, and its scales. I do not see any noteworthy differences. I believe that it is a good species, having some resemblance to *P. Mohrioides* Bory.”

Dr. Christ suffered under the disadvantage of not having seen, I presume, a full-sized specimen of *P. Moorei*, alongside which the fern in question is a dwarf; and the further disadvantage of not having seen *P. Moorei* in its natural habitat, which is mostly in the shade, in damp, rocky crevices, though sometimes in the open. It is, also, always marked by the character that has given it its local name of “the heavy fern.” Moreover, while my specimens of the rarer fern were found in a cave, Mr. Maiden’s were collected practically in the open, in an out-crop of sand-swept rock by the sea-shore. It must be also said that a full-sized root of *P. Moorei* would be a fair weight for a man to carry down the mountain-side.

I have carefully examined the rare fern collected by Mr. King and Mr. Maiden, comparing it at every point with *P. aculeatum* and *P. Moorei*, and have no hesitation in publishing it as a new species, and in dedicating it to Mr. E. King, who first collected it, and who is, perhaps, with the exception of his son, the only person, who, even to-day, knows where to find it.

POLYSTICHUM KINGII Watts, sp.nov. (*P. aculeatum* var. *Moorei* Chr.).

Rhizome very short, its apex densely matted with linear-lanceolate, filmy scales up to one inch or more in length, terminating in a long flexuose hair-point, shaded from light brown to chestnut-brown; fronds from 3 to 12 inches in length, and from 2 to $4\frac{1}{2}$ inches in width, the upper surface of a light green, the lower surface paler; pinnæ equal, horizontal, the lower ones mostly decurved, $\frac{1}{2}$ to $2\frac{1}{2}$ inches in length, subdeltoid, obtuse, subdivided into shortly petiolate, obtusely deltoid, crenate pinnules, the upper part becoming gradually less divided, and terminating in a deltoid crenate apex; pinnules tending to a similar subdivision; texture coriaceous; veins indistinct, not visible on the upper surface, and giving to the lower a substrate appearance, fairly numerous, divergent and forked; rhachis straw-coloured to brown, the base imbedded in and covered with the richly-coloured scales of the rhizome, scaly throughout, for the most part very slightly, curved or flexuose; sori close-set on the pinnules, medial; indusium firm, dark-brown, adherent, of a dense consistency, the edge recurved.

On rocks, eastern side of Mt. Lidgbird, 1895(?), and in cave, Mt. Lidgbird, Aug., 1911 (E. King); among rocks at mouth of Soldier's Creek, 1898 (J. H. Maiden).

P. Moorei is distinguished as follows:—Scales not clustered as in *P. Kingii*, larger, and, for the most part, less filmy and darker in colour; rhachis very scaly throughout, even in the pinnæ ("very shaggy," Bentham); indusium larger, more filmy, with erect or upturned, somewhat crinkled edge; sori more extended, practically covering the whole of the under-surface of the frond, making it "heavy," the indusium falling away readily, even where fronds have been gathered when the sori were immature; veins distinctly visible on the upper surface; fronds up to 12 inches wide; pinnæ

more compound, curved upwards, acuminate; pinnules much longer on one side than the other.

Dr. Christ's first determination of our plant as a variety of *P. aculeatum* may be due to some misunderstanding, as it is not at all aculeate. It differs in other respects also.

It remains only to add that the following species, which have been recorded for the Island, I did not succeed in finding:—*Hymenophyllum minimum* A. Rich., *H. tunbridgense* Sm., *Trichomanes javanicum* Blume, *Davallia dubia* K.Br., *Cheilanthes tenuifolia* Sw., *Pteris incisa* Thunb., (*Histiopteris*), *Doodia aspera* R.Br., *Aspidium apicale* Baker, *Dryopteris punctata* (Thunb.) (*Polypodium*).

Of these, I have been able to verify the first three, there being specimens in the Sydney Herbarium. Of the rest, there are no specimens in the Herbarium, which, however, contains *Cheilanthes tenuifolia*, *Pteris incisa*, and *Dryopteris punctata*, from Norfolk Island. Specimens of *Hymenophyllum minimum* and *Aspidium apicale* are particularly desiderated.

POSTSCRIPT [*added 31st October, 1912*].—Note on *POLYSTICHUM KINGII*.

The description of *Polystichum Kingii* was based upon the specimens at the time available in Sydney. Since the paper was read before the Society, I have received fresh material from the eastern side of Mt. Lidgbird, growing among damp rocks in the open, where, I believe, the original specimens, sent by Edward King to Mr. C. Moore, were collected. My new material includes strongly-rooted plants, which are now growing in Sydney, in my own bush-house, and in the Botanical Gardens. These specimens necessitate some modification of the description:—

1. The plants being older and more complete, the rhizome is more distinct; and, instead of "Rhizome very short, its apex," etc., the description should read, "Rhizome short, embedded in a mass of rootlets, its apex," etc.

2. The pinnules, especially those that are undivided, have a habit of incurving near the base, so as to produce a cup-like formation, while, in the upper part, the edges are slightly recurved. After the words, "pinnules tending to a similar subdivision," there should be added, "incurved at the base, producing a cup-like appearance, the edges slightly recurved in the upper half."

3. While, in the earlier specimens, the frond was mostly upright, and only slightly scaly, except for the cluster of scales at the base, in the new material it is bent back into a procumbent position, is densely covered throughout with rich brown scales, very long and hair-like, and is almost invariably bent to right, or to left, often at as much as a right-angle. The scales at the base of the rhachis are of a darker brown than in the specimens first available, as in *Polystichum Moorei*; but those on the upper part of the rhachis are very distinct from those of that species. The young fronds in my bush-house show a mode of growth that is very distinct from that of the young fronds of *P. Moorei*. Covered with light-coloured scales, the new frond grows back from its base procumbently, and its circinnate pinnae stand quite upright before unrolling and assuming the horizontal position. In all the fronds recently received, the pinnae begin close to the base of the rhachis (so unlike *P. Moorei*), and that characteristic is most marked in the young fronds growing in my bush-house. The description of the rhachis should therefore read:—"Rhachis straw-coloured to brown, the base densely matted with the richly coloured scales of the apex of the rhizome, sometimes closely covered throughout with brown hair-like scales, at other times almost naked above the base, curved or flexuose."

If the form with the very hairy rhachis is regarded as the type of the species, then possibly the other form may be described as "*forma umbrosa*."